



# HOLY MISSION HIGH SCHOOL, SAMASTIPUR

Affiliated to CBSE. DELHI, +2 level

SUBJECT - MATHS

CLASS-IX

## HALF YEARLY EXAMINATION-2019

### General instructions

- 1-All questions are compulsory
- 2-The paper consists of 30 questions divided into four sections A, B, C, D
- 3-Section A comprises of 6 questions of 1 marks. Section B comprises of 6 questions of 2 marks. Section C comprises of 10 questions of 3 marks. Section D comprises of 8 questions of 4 marks.
4. Use of calculator is not permitted

### SECTION-A

1. Simplify the given expression:  $(3 + \sqrt{3})(2 + \sqrt{2})$
2. Write the equation  $7x = 3$  in the Standard form?
3. The area of a  $\triangle ABC$  is  $8\text{ cm}^2$  in which  $AB = AC = 4\text{ cm}$  and  $\angle A = 90^\circ$ . (True/False)
4. For a line whose equation is  $2x + y = 5$ , does point  $(2, 1)$  lie on it?
5. Find the Mode of the given data 1, 1, 2, 2, 2, 2, 4, 4, 4, 4, 4, 3, 3, 3, 3, 1, 1, 2, 2, 2, 3, 3, 3.
6. Three angles of a quadrilateral are  $60^\circ$ ,  $110^\circ$  and  $86^\circ$ . What is the measure of the fourth angle of the quadrilateral

### SECTION-B

7. Factorise:  $7\sqrt{2}x^2 - 10x - 4\sqrt{2}$
8. What is the area of the triangle having sides of lengths 7 cm, 24 cm and 25 cm?
9. For what value of  $c$ , the linear equation  $2x + cy = 8$  has equal values of  $x$  and  $y$  for its solution.
10. Two supplementary angles are in the ratio 4 : 5. Find the angles.  
Find the measure of each angle
11. It is given that  $\angle 1 = \angle 4$  and  $\angle 3 = \angle 2$ . By which Euclid's axiom, it can be shown that if  $\angle 2 = \angle 4$  then  $\angle 1 = \angle 3$ .
12. Represent  $\sqrt{3}$  on number line

### SECTION -C

13. Show that in a quadrilateral ABCD,  $AB + BC + CD + DA > AC + BD$ .
14. Locate the points  $(5, 0)$ ,  $(0, 5)$ ,  $(2, 5)$ ,  $(5, 2)$ ,  $(-3, 5)$ ,  $(-3, -5)$  and  $(6, 1)$  in the Cartesian plane
15. In a parallelogram PQRS. The Altitude corresponding to sides PQ and PS are respectively, 7 cm and 8 cm find PS, if  $PQ = 10$  cm.
16. If the bisector of an angle of a triangle bisects the opposite side, prove that the triangle is isosceles.
17. Find  $ab$ , if  $a + b = \sqrt{11}$ ,  $a^2 + b^2 = 5$
18. In  $\triangle ABC$ , BE and CF are altitudes on the sides AC and AB, respectively, such that  $BE = CF$ . Using RHS congruency rule, prove that  $AB = AC$
19. What is Euclid's second axiom? Prove that every line segment has one and only mid-point
20. Find the height of a trapezium in which parallel sides are 25 cm 77 cm and non-parallel sides are 26 cm and 60 cm. Given the area of the trapezium as  $1644\text{ cm}^2$ .
21. The perimeter of a right triangle is 30 cm. If its hypotenuse is 13 cm, then what are two sides?
22. Draw the graph of the equation  $x - y = 4$ . From the graph, find the coordinates of the point when the graph line meets the x-axis.

$$A + n \left( \frac{u_1 + b_1}{2b_1} \right)$$

SECTION -D

23. If  $x + y + z = 0$ , show that  $x^3 + y^3 + z^3 = 3xyz$ .

24. Factorise:  $a^2 + b^2 - 2(ab - ac + bc)$ .

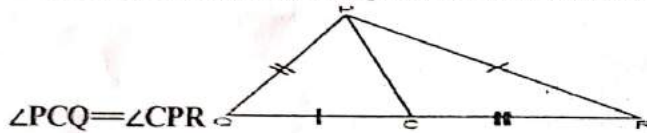
25. The mean of 40 numbers was found to be 35. Later on it was detected that a number 56 was misread as 16. Find the correct mean of the given numbers.

26. Find the mode for the following data using the relation : mode = (3 median - 2 mean)

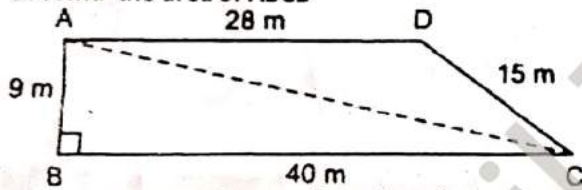
Item (x)	Frequency (f)
16	1
17	1
18	3
19	4
20	1
21	2

27. Prove that the medians of an equilateral triangle are equal.

28. In the given figure, triangles PQC and PRC are such that  $QC = PR$  and  $PQ = CR$ . Prove that



29. Find the area of ABCD



30. The polynomial  $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$  when divided by  $(x + 1)$  leaves the remainder 19. Find the value of  $a$ . Also find the remainder when  $p(x)$  is divided by  $(x + 2)$ .

ALL THE BEST